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Notes on Several Special Transformations.

WHILE reciprocating and subtracting from unity both belong to the periodic transformations whose period is two, yet the two combined lead to a transformation whose period is six. It is of special interest to observe that the six values thus obtained are the six related values of an anharmonic ratio. They are the following:—

$$a, \frac{1}{a}, \frac{a-1}{a}, \frac{1}{a-1}, \frac{1}{1-a}, 1-a.$$

This furnishes a convenient means of remembering these important values.

In the special case of homographic transformations, when

$$x = \frac{ay - a_2}{a_3 y - a}$$

we easily see that is expressed in the same form with respect to x as x is with respect to y . That is

$$y = \frac{ax - a_2}{a_3 x - a}$$

When x and y are reals the locus of this equation is symmetrical with respect to the bisector of the angle between the x and y axes.

GEO. A. MILLER.

Eureka C. Ilege, Jan. 26.

Skeletons of Steller's Sea-Cow Preserved in the Various Museums.

IN the last number of *Science* (Feb. 3, 1893, p. 56) Dr. Barton W. Evermann has an interesting note on the "Skeleton of Steller's Sea-Cow," which he was fortunate enough to purchase for the National Museum during his stay at Bering Island, 1892. The article is slightly erroneous where he enumerates the material in the museums previous to his visit to the island, as many more skeletons and parts of skeletons are preserved than he thinks.

He says: "This [i.e., the skeleton in the U. S. National Museum, made up from bones brought home by me], together with the two skeletons at St. Petersburg and Helsingfors, and the two ribs in the British Museum, constitute the total amount of material pertaining to Rytina found in the museums of the world at the time of my visit to Bering Island."

Let me add to this that there is a fairly good skeleton in the museum of the Swedish Academy of Sciences at Stockholm, brought home by Nordenskiöld, and figured by him in his famous account of the "Vega" expedition. Another "nearly perfect" skeleton is in the British Museum, described and figured by Henry Woodward in the *Quarterly Journal of the Geological Society* (London, August, 1885, pp. 457-472). A third skeleton of *Rytina gigas*, and, in some respects at least, the best one, is in the museum of the Academy of Sciences in San Francisco, where it was mounted during the early part of 1892. This skeleton was formerly part of the museum belonging to the Alaska Commercial Company, but was afterwards presented to the Academy. As I said, this skeleton is in some respects superior to any one thus far found, although the cranium mounted with it belongs to another specimen. It was found on Bering Island during the winter of 1881-82, and as the cranium was not in as good condition as the rest of the skeleton a better one was substituted. I acquired the original, which is among the many crania which I collected for the National Museum.

These are the three entire skeletons of which I have any record, but there are undoubtedly several others in various museums. If I am not mistaken, St. Petersburg has acquired additional material (recently the Museum there offered a skull in exchange), and so have the museums in Moskva, Odessa, and, above others, Warsaw, to which city Dybowski sent most of the material collected by him. It is also reasonable to suppose that he reserved some for the university in Lemberg.

I myself collected about 20 crania for the National Museum besides quite a number of isolated bones in addition to those which were used in the "made-up" skeleton. Some of this material

has been distributed to the various museums, if I am not mistaken.

It will thus be seen that "the total amount of material pertaining to Rytina found in the museums of the world" is considerably larger than the three skeletons and two ribs mentioned by Dr. Evermann.

LEONHARD STEJNEGER,

U. S. National Museum, Smithsonian Institution, Washington, D.C., Feb. 7.

"Unconscious Cerebration."

SOME very puzzling psychological phenomena may be explained in simple ways by happening upon the correct point of view.

Numerous theories have been afloat to account for recollections of what had apparently never been seen before. For example, a friend of mine came across a scene in the Yellowstone, on his first visit to that region, and was astounded at the familiarity of every detail upon that occasion.

Knowing that he was addicted to fits of abstraction, I suggested that while preoccupied he had unconsciously mentally registered his surroundings and soon thereafter, without being aware of so doing, compared a conscious impression with an unconscious one.

A convincing illustration in common experience is afforded all of us when we are carefully reading a book and suddenly become aware of having turned a page or even several pages while thinking of something else all the time, and when we turn back and begin again are surprised to find that every word is familiar to us, though the reading over again was necessary to supply what otherwise might have been a gap in memory.

There may be other causes for similar instances, but the above will satisfactorily explain some cases, and simple explanations are preferable to far-fetched ones.

S. V. CLEVINGER.

Chicago, Ill.

BOOK-REVIEWS.

Hereditary Genius: An Inquiry into Its Laws and Consequences.
By FRANCIS GALTON, F.R.S., etc. London and New York,
Macmillan & Co. 379 p. 8°. \$2.50.

Finger Prints By FRANCIS GALTON, F.R.S. London and New
York, Macmillan & Co. 216 p. 8°. \$2.

THE first edition of Galton's "Hereditary Genius" appeared as long ago as 1869, and that before us is the second. His observations excited considerable attention, for, although he dealt with familiar facts for the most part, his methods of analyzing and stating them were new, and the results which he arrived at were not merely unexpected, to an English public they were startling.

These results are by no means modified to a feebler expression in the present edition. A few examples will illustrate this. On page 132 he says, "I look upon the peerage as a disastrous institution, owing to its destructive effects on our valuable races." Of the Christian Church in earlier centuries he writes: "She brutalized human nature by her system of celibacy, and demoralized it by her system of persecution of the intelligent, the sincere, and the free." Nor does he allow that she is much better to-day. She keeps us "in antagonism with the essential requirements of advancing civilization," and "leads us to a dual life of barren religious sentimentalism and gross materialistic habits."

These severe arraignments are not the hasty attacks of a polemist, but the calm reflections of a mature student of social statistics and historic data. If they shock any one by their force, he should study the volume, and ask himself whether they are not amply justified by the array of evidence it contains. The title, "Hereditary Genius," falls singularly short of the real scope of the work. It is, in fact, a comprehensive study of the means of improving the human race through wiser arrangements for reproduction. The precepts it inculcates will convince as well as surprise the reader, and many an ancient saw is pricked and disappears like a bubble by the keen points of the author's reasoning.

Mr. Galton's "Finger Prints" is a volume made up of various essays and observations, which have engaged him for several years, on the external anatomy of the papillary ridges on the extremities of the thumb and fingers. He has found that they remain singularly individual in character through long periods of life, and thus may serve for purposes of identification. They are slightly hereditary and have little or no ethnic value. They do not appear to be correlated to mental ability, temperament, or character. The volume as a whole presents an admirable model of a closely scientific investigation of a somatologic point; and perhaps is as valuable in this respect as for any definite results reached.

The Foot-Path Way. By BRADFORD TORREY. Boston, Houghton, Mifflin, & Co.

STUDENTS of living things have not inaptly been divided into two general classes, naturalists and biologists; the former including Englishmen like Gilbert White, Thomas Edward, and Richard Jefferies, and Americans like Thoreau, Burroughs, and Bradford Torrey, who delight in studying the actions of living beings on their native heath, in the coppice beside the brook, or amid the silence of the forest. Among the biologists are found the great majority of modern students whose days are spent in the laboratory, and who care little for a living organism until it has been killed, dissected, frozen, and cut into infinitesimal slices by the microtome. Without attempting to discuss the relative merits of these two methods, it will readily be admitted that the naturalists can put into their writings much more of that humanitarian interest which gives the charm to literature. Readers of Mr. Bradford Torrey's "Birds in the Bush" and "A Rambler's Lease" will know what to expect in wandering with him along the present "Foot-Path Way." They are not likely to be disappointed. Besides glimpses of rare warblers and individual peculiarities of common birds, they will now and then see a beautiful landscape, or hear the murmur of a mountain brook,

while mingled with all they will find much delightful philosophy. They will go to beautiful Franconia in June to learn

"How good life is at its best! And in such
'charmed days,
When the genius of God doth flow,'

what care we for science or the objects of science.—for grosbeak or crossbill (may the birds forgive me!) or the latest novelties in willows? I am often where fine music is played, and never without being interested; as men say, I am pleased. But at the twentieth time, it may be, something touches my ears, and I hear the music within the music; and, for the hour, I am at heaven's gate. So it is with our appreciation of natural beauty. We are always in its presence, but only on rare occasions are our eyes annoienced to see it."

Besides June in Franconia, there are papers on December Out-of-Doors, Dyer's Hollow, Five Days on Mount Mansfield, A Widow and Twins, A Male Ruby-Throat, Robin Roosts, The Passing of the Birds, A Great Blue Heron, Flowers and Folks and the Weymouth Pine. The humming-bird sketches (A Widow and Twins and A Male Ruby-Throat) are peculiarly interesting, while those on The Robin Roosts and The Passing of the Birds are full of fascinating bird news.

The Testimony of Tradition. By DAVID MACRITCHIE. London, Kegan Paul, Trench, Trübner, & Co. 204 p. Illustrated.

THE writer of this volume attempts to show that the ancient Picts of Scotland were of Mongolian descent, and had come across the sea from Norway. That, so far as we know, there never were any Finns in Norway about Bergen, whence the "Finnen" are said to have come, does not trouble Mr. MacRitchie. He merely remarks that "it may be assumed" that there were (p. 35). He lays much stress on the skin boats which these early seafarers used. But the Welsh used also just such, as well as many other nations. He makes no attempt to trace any of the ancient Pictish names to Finnish radicals, though he hints that it could be done.

CALENDAR OF SOCIETIES.

Philosophical Society, Washington.

Feb. 4. — R. S. Woodward, Abstract and Discussion of Paper Read at Last Meeting; F. L. O Wadsworth, Method of Determination of the Metre in Terms of a Wave-Length of Light; Waldeman Lindgren, Two Neocene Rivers of California; H. W. Turner, Remarks on the Geology of Calaveras County, California.

THE MODERN MALADY; or, Sufferers from 'Nerves.'

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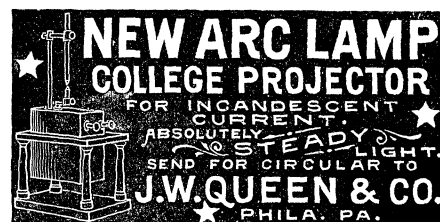
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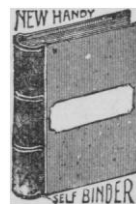
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